KRAMER ELECTRONICS LTD.

USER MANUAL

MODELS:

PT-571
HDMI Line Transmitter

PT-572+
HDMI Line Receiver

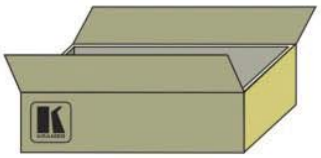
P/N: 2900-000690 Rev 6

PT-571, PT-572+ Quick Start Guide

This guide takes you through a basic installation and first-time use of your **PT-571** and **PT-572+**. For more detailed information, see the **PT-571, PT-572+** user manual. You can download the latest manual at http://www.kramerelectronics.com.

Step 1: Check what's in the box

- The **PT-571** HDMI Line Transmitter
- The **PT-572+** HDMI Line Receiver
- 2 power adapters (12V DC input)
- Mounting brackets
- 8 Rubber feet
- 1 Quick start guide
- 1 User Manual



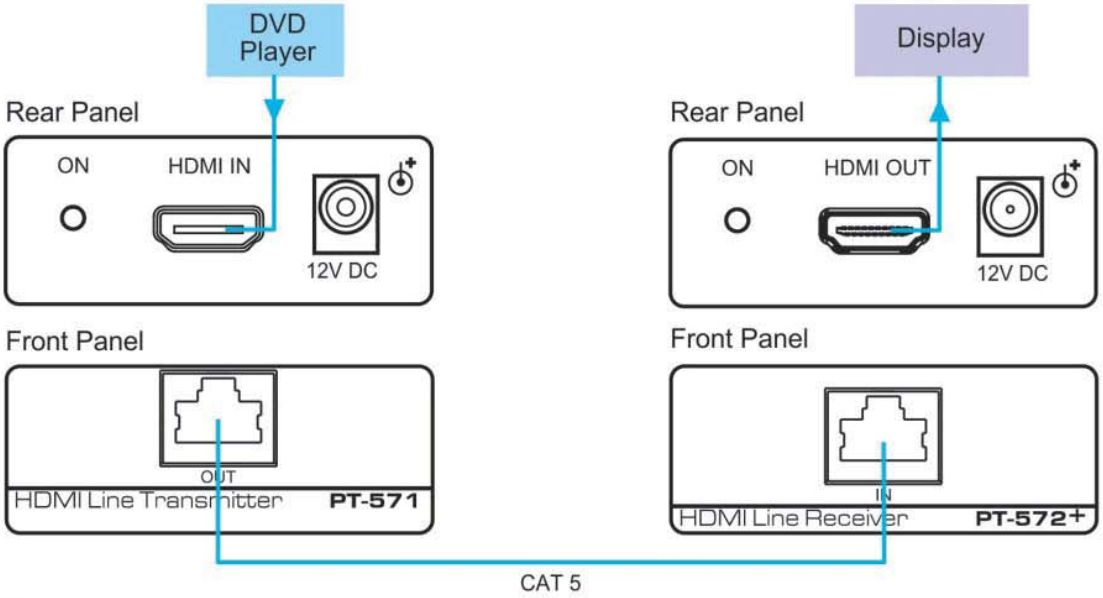
Save the original box and packaging materials in case your Kramer product needs to be returned to the factory for service.

Step 2: Install the PT-571, PT-572+

Mount the units in a rack or place them on a table.

Step 3: Connect inputs and outputs

Always switch OFF the power on each device before connecting it to your **PT-571**, **PT-572+**.



For best results, we recommend that you always use Kramer high-performance cables to connect AV equipment to the **TP-571** and **TP-572+**.

Step 4: Connect the power

Connect the power adapters to the **PT-571** and/or **PT-572+** and plug the adapter/s into the mains electricity.

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Our 1,000-plus different models now appear in 11 groups that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters, and GROUP 11: Sierra Products.

Congratulations on purchasing your Kramer **PT-571** and **PT-572+** transmitter/receiver pair, which is ideal for the following typical applications:

- Boardrooms, conference rooms and training rooms
- Presentation systems
- Signal distribution and home theater

You must use Shielded Twisted Pair (STP) cabling with the PT-571 and PT-572+.

Use only a straight pin-to-pin cable with RJ-45 connectors that meet the EIA /TIA 568B standard. Failure to do so may result in damage to the device(s).

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance high resolution cables

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **PT-571** and **PT-572+** transmitter/receiver pair away from moisture, excessive sunlight and dust

Caution: No operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics input power wall adapter that is provided with the unit

Warning: Disconnect the power and unplug the unit from the wall before installing

Go to http://www.kramerelectronics.com to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

3 Overview

The **PT-571** is a DGKat™ twisted pair transmitter for HDMI signals. The **PT-571** converts an HDMI signal to a single twisted pair signal and the **PT-572+** converts the twisted pair signal back to an HDMI signal.

The *HDMI Line Transmitter/Receiver* system features:

- Maximum data rate/bandwidth up to 1.65Gbps
- HDTV compatibility and HDCP compliance
- HDMI Support – HDMI (V.1.4 with Deep Color, x.v.Color™, HDMI Uncompressed Audio Channels, Dolby TrueHD, and DTS-HD)
- EDID PassThru that passes EDID signals between the source and display
- 3D pass-through
- System Range – Up to 90m (295ft) at 1080i, or up to 30m (98ft) at 1080p on shielded **BC-DGKat524** cable; 90m (295ft) at 1080i, or up to 70m (230ft) at 1080p on shielded **BC-DGKat623** cable; 100m (330ft) at 1080i or up to 90m (295ft) at 1080p on shielded **BC-DGKat7a23** cable

  Note that the transmission range depends on the signal resolution, graphics card and display used. The distance using non-Kramer CAT 5, CAT 6 and CAT 7a cables may not reach these ranges
- DGKat™ Signal Integration – Kramer's unique technology for converting TMDS as well as control and communication to signals that run over twisted pair cables
- Power Connect™ that feeds 12V DC over the CAT 5 cable from transmitter to receiver (see Section 3.2)
- Ultra-Compact PicoTOOLS™ – 4 units can be rack mounted side−by−side in a 1U rack space with the optional **RK−4PT** rack adapter.

Use only shielded cable where both ends of the shield are soldered to ground to eliminate ESD interface.

3.1 Using Twisted Pair Cable

Kramer engineers have developed special twisted pair cables to best match our digital twisted pair products; the Kramer: **BC-DGKat524** (CAT 5 24 AWG), the Kramer: **BC-DGKat623** (CAT 6 23 AWG cable), and the Kramer: **BC-DGKat7a23** (CAT 7a 23 AWG cable). These specially built cables significantly outperform regular CAT 5/CAT 6/CAT 7a cables.

3.2 About the Power Connect™ Feature

The Power Connect™ feature here means that only one unit in a system, the transmitter or receiver, needs to be connected to a power source when the devices are within 90m (270ft) of each other. The Power Connect™ feature applies as long as the cable can carry power and the distance does not exceed 90m on standard CAT 5 cable. For longer distances, heavy gauge cable should be used (CAT 5 cable is still suitable for the video/audio transmission, but not for feeding the power at these distances).

3.3 About HDCP

The High-Bandwidth Digital Content Protection (HDCP) standard developed by Intel, protects digital video and audio signals transmitted over DVI or HDMI connections between two HDCP-enabled devices to eliminate the reproduction of copyrighted material. To protect copyright holders (such as movie studios) from having their programs copied and shared, the HDCP standard provides for the secure and encrypted transmission of digital signals.

3.4 About HDMI-General Description

High-Definition Multimedia Interface (HDMI) is an uncompressed all-digital audio/video interface, widely supported in the entertainment and home cinema industry. HDMI ensures an all-digital rendering of video without the losses associated with analog interfaces and their unnecessary digital-to-analog conversions. It delivers the maximum high-definition image and sound quality in use today. Note that Kramer Electronics Limited is an HDMI Adopter and an HDCP Licensee.

HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI licensing LLC.

In particular, HDMI:

- Provides a simple interface between any audio/video source, such as a set-top box, DVD player, or A/V receiver and video monitor, such as a digital flat LCD / plasma television (DTV), over a single lengthy cable

  SIMPLICITY - With video and multi-channel audio combined into a single cable, the cost, complexity, and confusion of multiple cables currently used in A/V systems is reduced

  LENGTHY CABLE - HDMI technology has been designed to use standard copper cable construction at up to 15m

- Supports standard, enhanced, high-definition video, and multi-channel digital audio on a single cable

  MULTI-CHANNEL DIGITAL AUDIO - HDMI supports multiple audio formats, from standard stereo to multi-channel surround-sound. HDMI has the capacity to support Dolby 5.1 audio and high-resolution audio formats

- Transmits all ATSC HDTV standards and supports 8-channel digital audio, with bandwidth to spare to accommodate future enhancements and requirements

- Benefits consumers by providing superior, uncompressed digital video quality via a single cable, and user-friendly connector

  HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner

- Is backward-compatible with DVI (Digital Visual Interface)

- Supports two-way communication between the video source (such as a DVD player) and the digital television, enabling new functionality such as automatic configuration and one-button play

- Has the capacity to support existing high-definition video formats (720p, 1080i, and 1080p), standard definition formats such as NTSC or PAL, as well as 480p and 576p

4 Defining the PT-571 HDMI Line Transmitter

The Kramer Pico TOOLS **PT-571** HDMI Line Transmitter receives an HDMI signal, encodes it, and transmits it over a CAT 5 cable to the **PT-572+**.

The **PT-571** has:

- An HDMI input connector
- An RJ-45 CAT 5 output connector
- One power/status LED

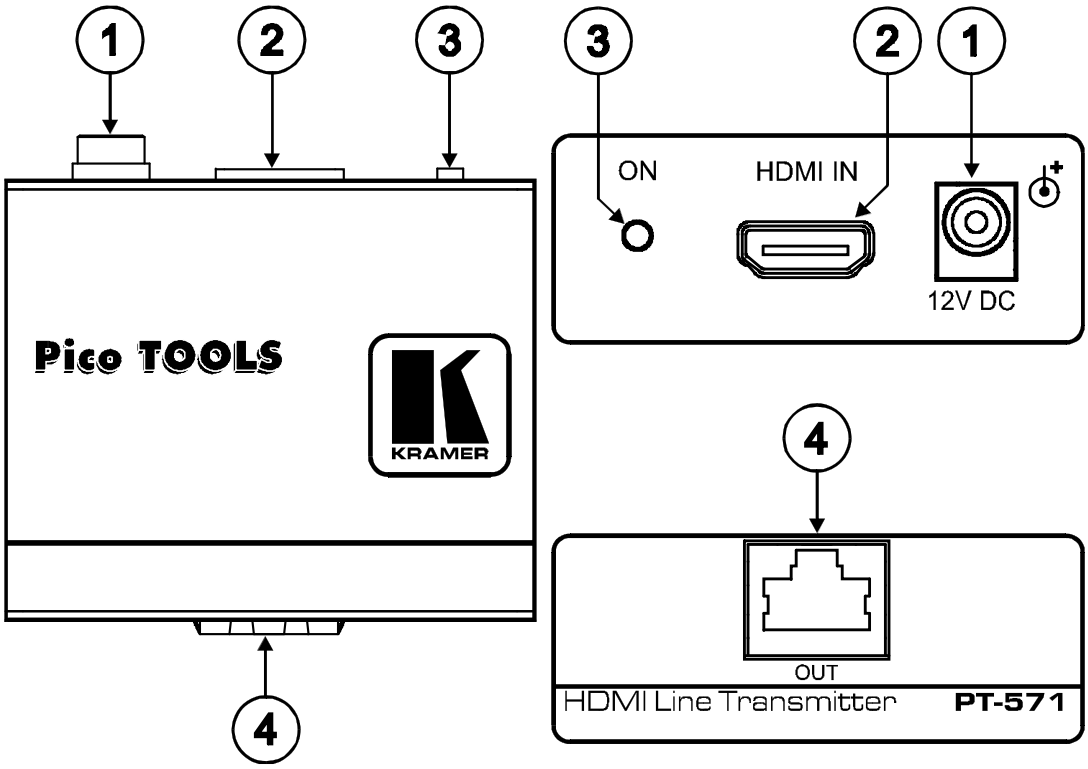


Figure 1: PT-571 HDMI Line Transmitter

#	Feature	Function
1	*12V DC*	+12V DC connector for powering the unit
2	*HDMI IN* Connector	Connect to the HDMI source
3	*ON* LED	Lights to indicate the following: Red—only the power is connected Orange—either the input or the output is connected Green—both the input and the output are connected If no input is connected the unit invokes the power save mode automatically turning off the power
4	*OUT* RJ-45 Connector	Connect to the IN RJ-45 connector on the **PT-572+**

5 Defining the PT-572+ HDMI Line Receiver

The Kramer Pico TOOLS **PT-572+** HDMI Line Receiver receives an encoded signal over a CAT 5 cable transmitted from the **PT-571**, decodes it, and converts it to an HDMI output.

The **PT-572+** has:

- An HDMI output connector
- An RJ-45 CAT 5 input connector
- One power/status LED

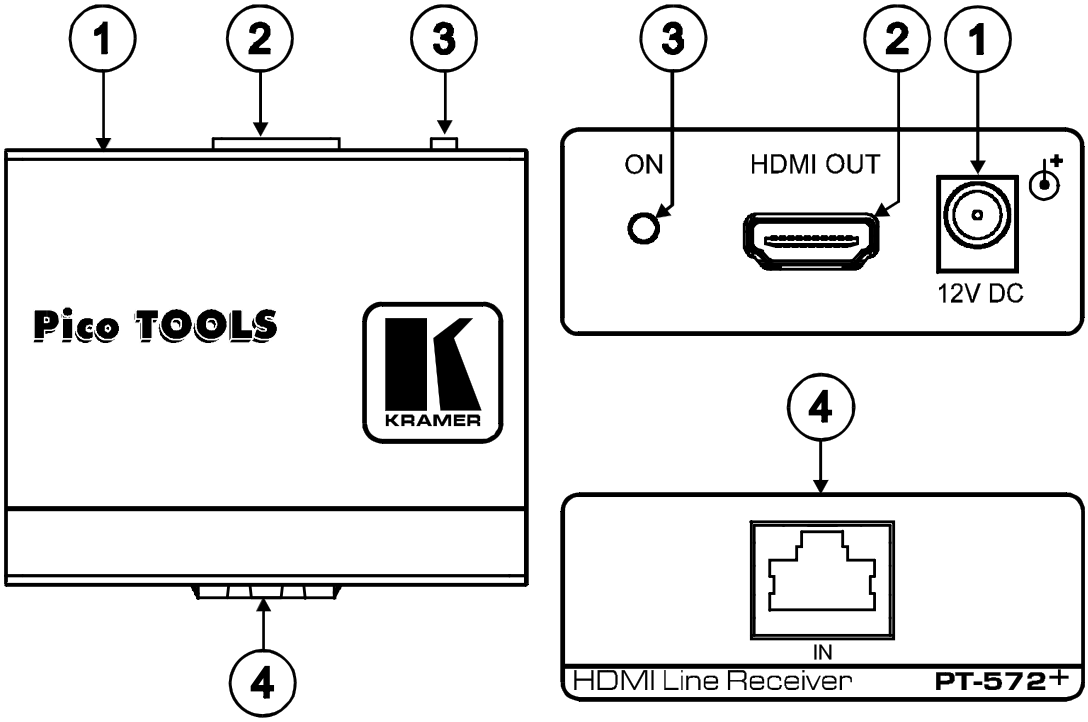


Figure 2: PT-572+ HDMI Line Receiver

#	Feature	Function
1	*12V DC*	+12V DC connector for powering the unit
2	*HDMI OUT* Connector	Connect to the HDMI acceptor
3	*ON* LED	Lights to indicate the following: Red—only the power is connected Orange—either the input or the output is connected Green—both the input and the output are connected
4	*IN* RJ-45 Connector	Connect to the OUT RJ-45 connector on the **PT-571**

6 Connecting the PT-571 and PT-572+ Transmitter Receiver Pair

Always switch off the power to each device before connecting it to your Transmitter and Receiver pair. After connecting your Transmitter and Receiver pair, connect the power and then switch on the power to each device.

You can use the **PT-571** *HDMI Line Transmitter* with the **PT-572+** *HDMI Line Receiver* to configure an HDMI transmitter/receiver system.

To connect the **PT-571** to the **PT-572+**, as illustrated in the example in Figure 3, do the following:

1. Connect the CAT 5 OUT RJ-45 connector on the **PT-571** to the CAT 5 IN RJ-45 connector on the **PT-572+** via a CAT 5 cable (see Section 6.1).

2. On the **PT-571**, connect an HDMI source (for example, a DVD player) to the HDMI IN connector.

3. On the **PT-572+**, connect the HDMI OUT connector to an HDMI acceptor (for example, a plasma display).

4. Connect the 12V DC power adapter to the power socket on the **PT-571** and/or the **PT-572+** and connect the adapter to the mains electricity (not shown in Figure 3).

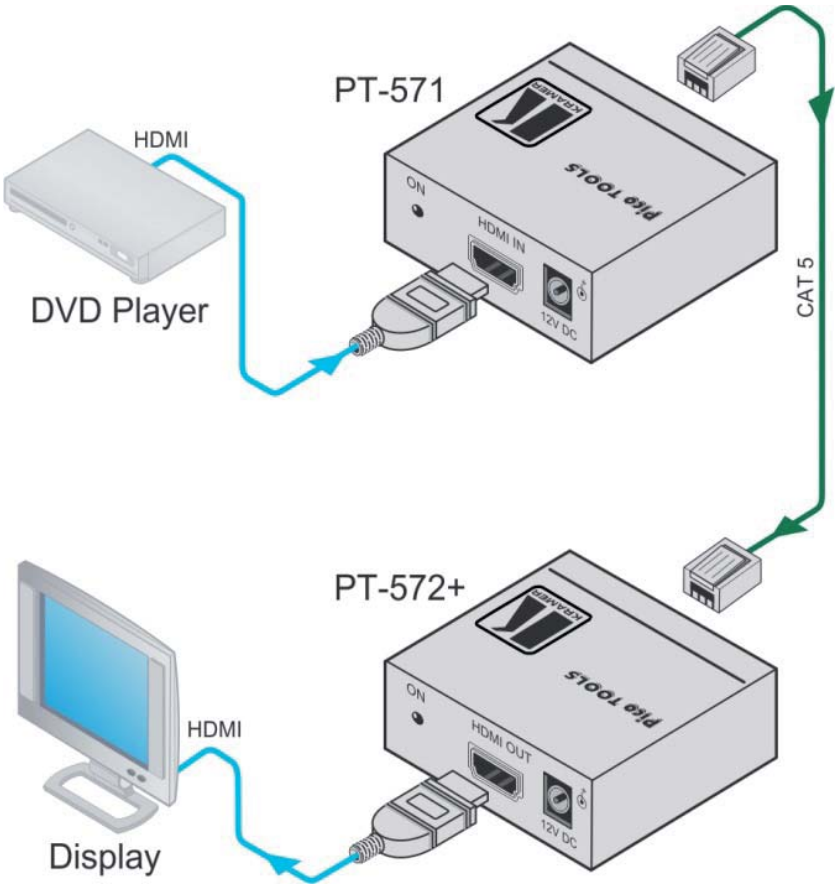


Figure 3: Connecting the PT-571/PT-572+ Transmitter/Receiver Pair

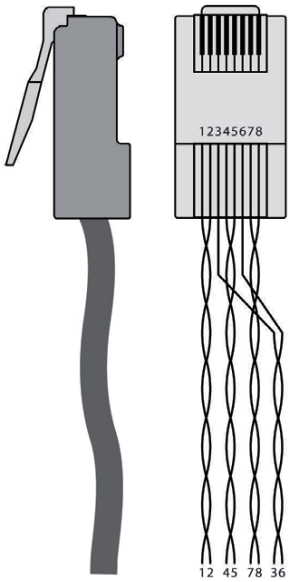
6.1 Wiring the CAT 5 LINE IN / LINE OUT RJ-45 Connectors

This section defines the CAT 5 pinout, using a straight pin-to-pin cable with RJ-45 connectors.

Note, that the cable Ground shielding must be connected / soldered to the connector shield.

EIA /TIA 568B	
PIN	**Wire Color**
1	Orange / White
2	Orange
3	Green / White
4	Blue
5	Blue / White
6	Green
7	Brown / White
8	Brown
Pair 1	4 and 5
Pair 2	1 and 2
Pair 3	3 and 6
Pair 4	7 and 8

Figure 4: CAT 5 PINOUT



7 Technical Specifications

	PT-571	PT-572+
INPUTS:	1 HDMI connector	1 RJ-45 connector
OUTPUTS:	1 RJ-45 connector	1 HDMI connector
BANDWIDTH:	Supports up to 1.65Gbps bandwidth per graphic channel	
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI and HDCP	
OPERATING TEMPERATURE:	0° to +55°C (32° to 131°F)	
STORAGE TEMPERATURE:	-45° to +72°C (-49° to 162°F)	
HUMIDITY:	10% to 90%, RHL non-condensing	
POWER SOURCE:	12V DC, 250mA	12V DC, 250mA
DIMENSIONS:	6.2cm x 5.2cm x 2.4cm (2.4" x 2.1" x 1") W, D, H	
WEIGHT:	0.14kg (0.3lbs)	
ACCESSORIES:	Power supply	
OPTIONS:	Kramer BC-DGKat524 (CAT 5 24 AWG), BC-DGKat623 (CAT 6 23 AWG) and BC DGKat7a23 (CAT 7a 23 AWG) cables, 19" RK-4PT rack adapter	
Specifications are subject to change without notice Go to our Web site at http://www.kramerelectronics.com to access the list of resolutions		

LIMITED WARRANTY

We warrant this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by us or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
   i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   ii) Product modification, or failure to follow instructions supplied with the product
   iii) Repair or attempted repair by anyone not authorized by Kramer
   iv) Any shipment of the product (claims must be presented to the carrier)
   v) Removal or installation of the product
   vi) Any other cause, which does not relate to a product defect
   vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC* Rules and Regulations: Part 15: “Radio frequency devices Subpart B Unintentional radiators”

CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.

  * FCC and CE approved using STP cable (for twisted pair products)

For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to this user manual may be found.

We welcome your questions, comments, and feedback.
Web site: www.kramerelectronics.com
E-mail: info@kramerel.com

SAFETY WARNING
Disconnect the unit from the power supply before opening and servicing

C-DGKat623 Termination

Introduction

Thank you for purchasing Kramer's BC-DGKat623 Twisted Pair cable and its Shielded RJ45 connectors (CON-CRIMP-RJ-45/CAT6(STP-23#)). Here is the procedure for terminating these cables.

Tools Needed

1. Razor Knife
2. Wire Cutters
3. Pliers
4. Standard RJ45 Crimp Tool

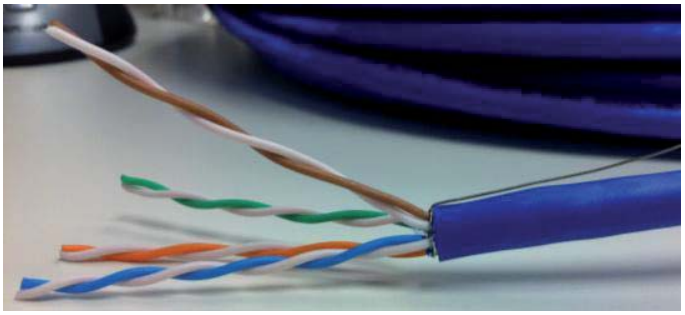
Procedure

Step 1

Remove approximately 2.5" of the Blue Jacket using the Razor Knife exposing the 4 shielded pairs and drain wire. Fold the drain wire over onto the cable for future use.

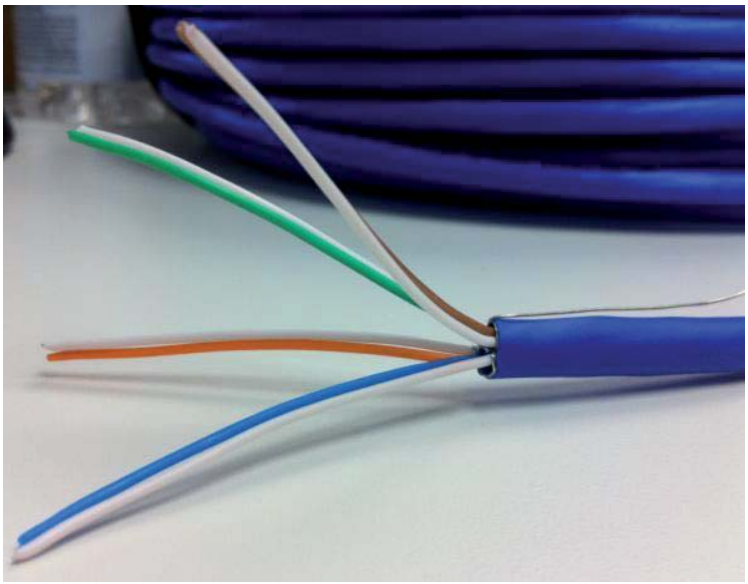
Step 2

Separate the 4 Pairs. Again using the Razor Knife, carefully remove the shielding without scoring the wires beneath it. Repeat for all 4 pairs.



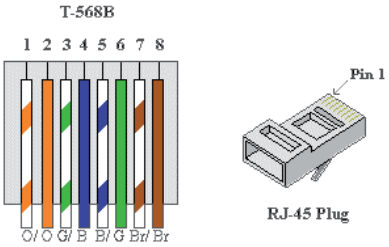
Step 3

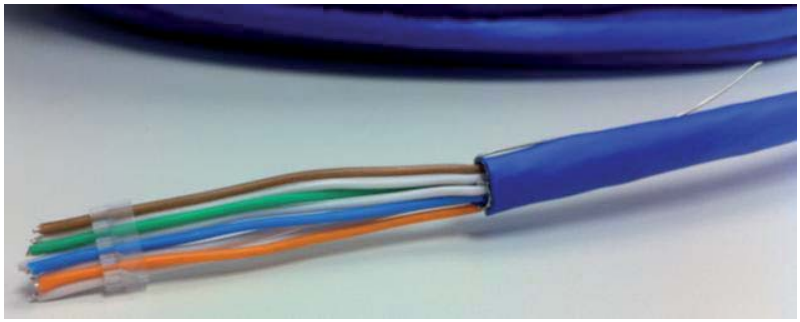
Un-twist each pair and straighten the individual conductors. Be sure to keep each pair together so it can be identified.



Step 4

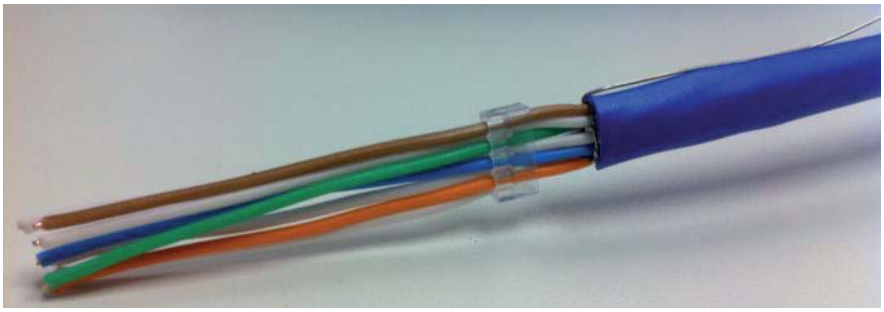
Using the standard wiring scheme shown below (T568B), insert conductors into plastic loader piece of the RJ45 connector. Plastic loader is necessary because the thickness of CAT6 cable does not allow it to sit flat in an RJ-45 like in normal CAT5. Notice how the loader staggers the cables and the picture below.





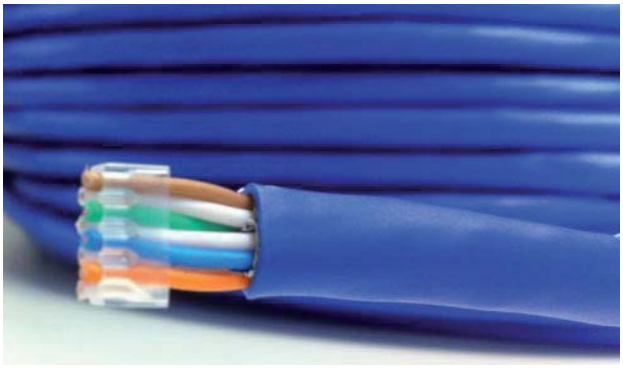
Step 5

Slide the plastic loader down the cable as close to the base as possible. Keep pressure on the top and bottom of the loader so cables stay in place while sliding down.



Step 6

Using the wire cutters, cut all conductors leaving approximately ½ an inch remaining.



Step 7

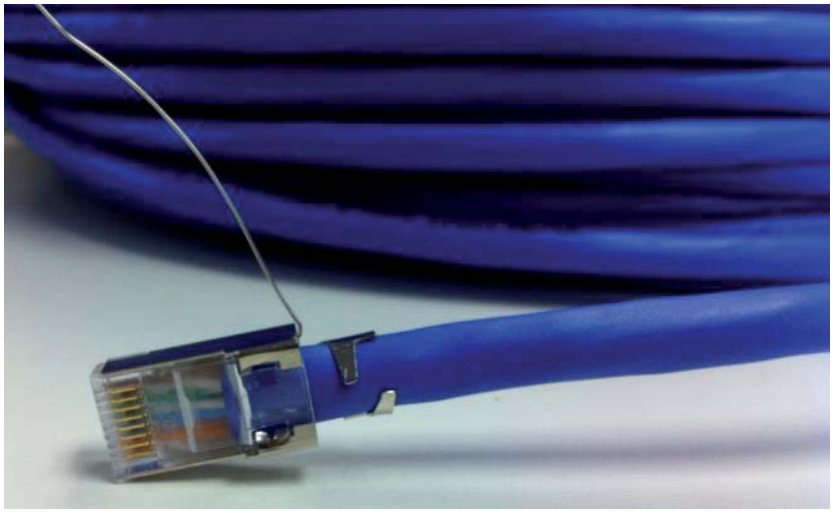
With the Orange Pair on the left and the clip of the RJ45 connector facing down, insert the cable into the RJ45 connector, pushing the cable all the way in until the exposed pairs contact the back of the connector.

Step 8

Using the Standard Crimp Tool, crimp the RJ45 connector.

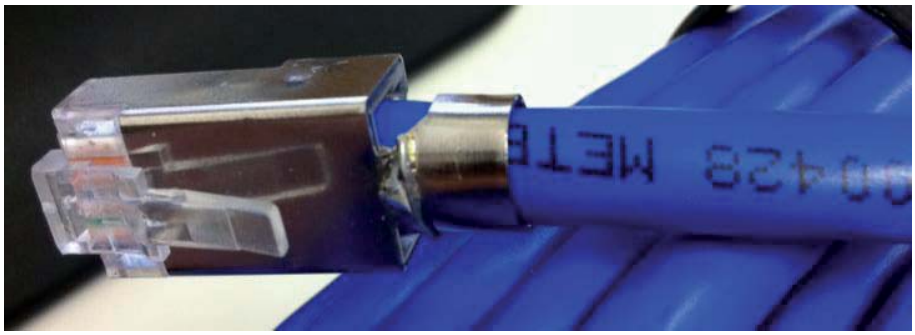
Step 9

Flip the drain wire up onto the RJ45 connector. Clamp the strain relief down on the Blue Jacket of the DGKat623 cable using pliers.



Step 10

Soldier the drain wire to the metal casing of the RJ45 connector and cut off the excess using the wire cutters.



Step 11

To verify continuity of the conductors and the shield use a cable tester like the one shown below.